

REMARKS

Reconsideration of this application as amended is respectfully requested. Claims 1, 4, 5, 8, 10, 13, 15 and 18 have been amended; and claim 17 has been canceled. Therefore, claims 1-16 and 18-19 are in this application and are presented for the Examiner's consideration in view of the following comments.

Applicants have amended claims 1, 4, 5, 8, 10, 13, 15 and 18 merely to improve their form without regard to the rejections discussed below.

The Examiner has objected to FIG. 11 of the drawings because, according to the Examiner, the label "X2p" should be added to reflect the description in the specification. Applicants respectfully do not agree. The "Final Compare & Decision Device" unit is referred to in Applicants' specification with the reference character "964." As such, the reference character "964" is clearly shown in FIG. 11 and, along with its associated "leader line," clearly refers to the similarly labeled box "Final Compare & Decision Device." In contrast, Applicants respectfully submit that the label "X2p" is not a reference character as defined in 37 C.F.R. § 1.84(p) but merely describes a signal related to unit 964. (Applicants' specification, p. 22, lns. 24-25; FIG. 11.) As such, Applicants are not required to insert "X2p" into FIG. 11 since 37 C.F.R. § 1.84(p)(5) does not apply.

The Examiner has objected to the disclosure because the reference character "755" is not shown in the drawing. Applicants have amended the specification to delete the reference character "755." Applicants respectfully submit that no new matter has been added.

Claim 16 has been objected to by the Examiner because of the lack of antecedent basis with respect to the term "state machine." Applicants presume that the Examiner meant to refer to claim 17, since claim 16 does not have the term "state machine." In that regard, Applicants have canceled claim 17 to remove the basis for the Examiner's rejection.

Claims 1-7, 10 and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,914,988 issued June 22, 1999 to Hu ("*Hu*") in view of U.S. Patent No. 5,740,203 issued April 14, 1998 to Ramaswamy et al. ("*Ramaswamy*"). Applicants respectfully do not agree.

The Examiner asserts that *Ramaswamy* describes:

a processor and its methods (406 FIG. 4) to process the re-encoded data (as one input) to produce difference data and deriving decoded symbol data using the delayed data and the different data (column 9 lines 46-58, column 13 lines 190-26).

Applicants respectfully submit that the Examiner's characterization of *Ramaswamy* is incorrect. For example, the Examiner points to col. 9, lns. 46-58 of *Ramaswamy* as describing the production of difference data and deriving decoded symbol data. This portion of *Ramaswamy* is reproduced below.

Returning to FIG. 4, I-channel RAM 400 is initially preloaded by microcontroller interface 204 with a 1-bit lookup table in the 16 QAM (Table 1) case, with a 2-bit lookup table in the 64 QAM (Table 2) case, and with a 3-bit lookup table in the 256 QAM (Table 3) case. Similarly, Q-channel RAM 402 is initially preloaded by microcontroller 204 with a 1-bit lookup table in the 16 QAM (Table 1) case, with a 2-bit lookup table in the 64 QAM (Table 2) case, and with a 3-bit lookup table in the 256 QAM (Table 3) case. The lookup table of I-channel RAM 400, in response to being addressed by the 6-bit I input from delay logic 312 and the 2-bit I input from convolutional encoder 308, reads out the binary Gray code I component of that column of constellation symbols which is closest in distance in the I (horizontal) direction to the I component position of the delayed received symbol. Similarly, The lookup table of Q-channel RAM 402, in response to being addressed by the 6-bit Q input from delay logic 312 and the 2-bit I input from convolutional encoder 308, reads out the binary Gray code Q component of that row of constellation symbols which is closest in distance in the Q (vertical) direction to the Q component position of the delayed received symbol.

(*Ramaswamy*, col. 9, lns. 46-48, emphasis added.)

As can be seen from the underlined text above, the I-channel RAM 400 provides the I component closest in distance. The text immediately following similarly describes the Q-channel RAM 402 providing the Q component closest in distance. As such, RAM 400 and RAM 402 do not provide difference data but provide the actual component values of those symbols closest in distance.

In view of the above, *Ramaswamy* does not describe or suggest "difference data representative of a difference" as required by Applicants' independent claims 1 and 5.

In addition, Applicants respectfully note that the Examiner has not addressed the "between successive symbols" requirement of Applicants' independent claims 1 and 5. Applicants respectfully submit that nowhere does *Ramaswamy* describe or

suggest a demapper using difference data representative of a difference "between successive symbols" as claimed by Applicants.

As noted above, the Examiner also points to col. 13, lns. 19-26 of *Ramaswamy* as also describing the production of difference data and deriving decoded symbol data. This portion of *Ramaswamy* is likewise reproduced below.

Returning to FIG. 4, 8-PSK demapper logic means 406 does not use a lookup table directly to make the decision as to which of the 2 symbols (I_1Q_1) and (I_2Q_2) in that one of the 00, 01, 10 and 11 subsets selected by the 2-bit input from convolutional encoder 308 to 8-PSK demapper logic means 406 is closer to the data point (I,Q) of the received symbol determined by the 6-bit I and 6-bit Q inputs from delay logic 312 to 8-PSK demapper logic means 406. The only operation that needs to be performed in order to make this decision can be decided by making the following logical comparison by 8-PSK demapper logic means 406:

| | |
|---|-------------|
| IF $I \times I_1 < Q \times Q_2$, then | Output = 1; |
| ELSE | Output = 0. |

(*Ramaswamy*, col. 13, lns. 19-34.)

Again, as can be observed from the above text, nowhere does *Ramaswamy* describe or suggest "difference data representative of a difference" as required by Applicants' independent claims 1 and 5. Further, even if, for the sake of argument only, the logical expression " $I \times I_1 < Q \times Q_2$ " on col. 13, ln. 31 of *Ramaswamy* could be interpreted as a difference — this is still not difference data representative of a difference "between successive symbols" as required by Applicants' independent claims 1 and 5. Indeed, as indicated by the underlined text above, I and Q refer to the components of the received symbol, while I_1 and Q_2 refer to the respective I and Q components of the two possible symbols to choose between. Therefore, this text of *Ramaswamy* does not describe Applicants' claimed "difference data representative of a difference "between successive symbols." Applicants request that the Examiner particularly point to that portion of *Ramaswamy* that describes the operation of demapper 310 with regard to difference data and successive symbols as claimed by Applicants.

Finally, Applicants note that nowhere does *Hu* describe or suggest Applicants' required "difference data representative of a difference between successive symbols." Applicants do note that adder 950 of demapper 60 of *Hu* operates in a filtered mode to add one of eight predetermined constellation points from unit 985 to the received

symbol. (*Hu*, col. 14, lns. 11-27) However, these are predetermined constellation points. As such, adder 950 of *Hu* does not provide "difference data representative of a difference between successive symbols" as claimed by Applicants.

In view of the above, Applicants respectfully submit that independent claims 1 and 5 are patentable over *Hu* in view of *Ramaswamy*. Consequently, the basis for the rejection of dependent claims 2-4, 6, 7, 10 and 12 has also been removed.

Claims 8, 9 and 13-19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Hu* in view of *Ramaswamy* and U.S. Patent No. 5,619,540 issued April 8, 1997 to Moridi et al. Applicants respectfully traverse for the reasons described above with respect to independent claims 1 and 5.

Claim 11 has been objected to by the Examiner as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. For the reasons described above with respect to Applicants' independent claim 5, Applicants respectfully submit that claim 11 is in condition for allowance.

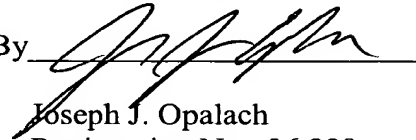
As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited. If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that the Examiner telephone Applicants' attorney at 609-734-6839 in order to overcome any additional objections that the Examiner might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 07-0832 therefor.

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Respectfully submitted,

By



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